The Flipped Classroom

The flipped or inverted classroom is a form of blended learning in which "events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa" (Lage et al., as cited in Bishop and Verlager, 2013). In this model, learning is divided into two parts – "interactive group learning activities inside the classroom, and direct computer-based individual instruction outside the classroom" (Bishop & Verleger, 2013).

The flipped classroom typically takes the form of web-based video lectures delivered at home, with class time devoted to problem solving, discussion, debates, case studies, and other activities. What is important to keep in mind is that the flipped classroom "actually represents an expansion of the curriculum, rather than a mere re-arrangement of activities" (Bishop & Verlager, 2013). Another important distinction is that the flipped classroom gives students their first exposure to new course content outside of class, followed by time spent in class assimilating the content into new knowledge (Brame, 2013).

The flipped classroom is based in the constructivist model of learning. In this model, learning is "active, social process in which learners use existing knowledge and prior experiences to build an individual understanding of new material" (Brown, Collins, & Duguid, 1989, as cited in Shimamoto, 2012). Further, in this model, teachers "act as facilitators, guiding students through the learning process while allowing them to shape their own understanding of the instruction" (Rhodes & Bellamy, 1999, as cited in Shimamoto, 2012). In terms of Bloom's taxonomy of learning, the flipped classroom has students perform the lower levels of cognitive work outside of class, and the higher levels of cognitive work in class, alongside their fellow students and instructor (Brame, 2013).

The basic model of the flipped classroom, in which lectures are recorded for viewing outside of class and class time is dedicated to active and student-centred learning, was developed using research into student learning. For example, video lectures have been shown to be as effective as live lectures at presenting basic information (Bishop & Verleger, 2013), and students in active learning environments "show improved retention and better conceptual understanding of learned material" (Sezer, 2011 as cited in Shimamoto, 2012).

Cynthia Brame believes that the flipped classroom meets key characteristics of a successful learning experience, as defined by Bransford, Brown, and Cocking in their book *How People Learn:*

> "By providing an opportunity for students to *use* their new factual knowledge while they have access to immediate feedback from peers and the instructor, the flipped classroom helps students learn to correct misconceptions and organize their new knowledge such that it is more accessible for future use. Furthermore, the immediate feedback that occurs in the flipped classroom also helps students recognize and think about their own growing understanding" (Brame, 2013).

In their survey of research surrounding the flipped classroom, Bishop & Verlager found that student perceptions of the flipped classroom were generally positive (2013). While students

tended to prefer live lectures to pre-recorded ones, they also stated that they preferred interactive classroom activities to lectures. Students also tended to watch the lecture videos, even when they weren't specifically required to do so, and one study noted that students who watched optional video lectures were better prepared for class than students who had been assigned textbook readings (DeGrazia et al., as cited in Bishop & Verlager, 2013).

Models for the Flipped Classroom

Brame has defined the flipped classroom as having four key elements (2013):

1. Provide an opportunity for students to gain first exposure to course material prior to class, whether through lecture videos or screencasts.
2. Give students an incentive for students to prepare for the day's activities by requiring them to complete a specific task before they come to class. This can accomplished via automated quizzes, discussion board posts, or assignments to be reviewed in class.
3. Develop a mechanism to assess student understanding. Pre-class tasks can help the instructor tailor class content to match student need. Self-grading quizzes can provide students with self-knowledge as to where they need help. In-class activities can be structured so as to provide students with feedback both from their peers and the instructor.
4. Use in-class activities that focus on higher level learning objectives. As described above, class time should be used to promote deeper learning and to increase the skill with which students can apply and synthesize the knowledge they gained when preparing for class (Brame, 2013)

In their book, *Effective Grading*, Walvoord and Johnson propose an assignment-based model for the flipped classroom where students are required to produce work, such as a piece of writing, prior to class. Class time is then be used to run activities that would generate productive feedback for that work. This model ensures students prepare for class, and reduces the need for the instructors to spend time outside of class producing extensive feedback on student work (1998, as cited in Brame, 2013).

Lage, Platt, and Treglia developed a flipped classroom approach in order to address the diversity of student learning needs. In their model, students are provided with a variety of material to review outside of class, including readings, lecture videos, screencasts of PowerPoint presentations with voice-over, and printable slides. Class time is spent on activities that encourage students to process and apply course principles, ranging from mini-lectures in response to student questions to experiments to small group discussions of problems (2000, as cited in Brame, 2013). This model successfully integrates two of the three best practices in universal design for learning—representation (using a variety of methods to present course material) and engagement (using a variety of methods to capture student's attention) (Ohio State University).

Another model for the flipped classroom centers on peer instruction. In this model, developed by Mazur and Crouch, class time consists of mini-lectures followed by conceptual questions. These conceptual questions are posed to the entire class via a personal response system, in this case,

clickers. If a large proportion of the class answers incorrectly, the students form small groups to reconsider the question. After these guided small group discussions, students must answer the question again, with the instructor providing feedback and explanation as needed. This cycle is repeated for the rest of the class, with each iteration taking about 15 minutes (2001, as cited in Brame, 2013).

In each of these models, students are encouraged to come prepared to class by having to complete some form of pre-class activity, whether it is the writing assignments used by Walvoord and Johnson, worksheets collected and graded at random by Lage, Platt, and Treglia, or quizzes given by Mazur and Crouch (Brame, 2013). The effectiveness of this technique has been confirmed in Bishop & Verlager's survey of the literature, which reports that in many cases, the students themselves suggested using a pre-class quiz (2013).

Work Cited

Bishop, J.L. & Verlager, M.A. (2013). The Flipped Classroom: A Survey of the Research. *120th ASEE Annual Conference & Exposition*. http://www.studiesuccesho.nl/wp-content/uploads/2014/04/flipped-classroom-artikel.pdf

Ohio State University. Fast Facts for Faculty. http://ada.osu.edu/resources/fastfacts/Universal_Design.htm

Shimamoto, D. (2012) Implementing a Flipped Classroom: An Instructional Module. *Technology, Colleges, and Community Worldwide Online Conference*. http://scholarspace.manoa.hawaii.edu/handle/10125/22527

Brame, C. (2013). Flipping the classroom. Center for Teaching, Vanderbilt University. http://cft.vanderbilt.edu/guides-sub-pages/flipping-the-classroom/